Volunteer Lake Assessment Program Individual Lake Reports

LONG POND, PELHAM, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	1,142	**Max. Depth (m):**	7.6	**Flushing Rate (yr^{1})**	1.5
Surface Area (Ac.):	121	**Mean Depth (m):**	3.2	**P Retention Coef:**	
Shore Length (m):	4,800	**Volume (m^3):**	1,559,000	**Elevation (ft):**	151

TROPHIC CLASSIFICATION

Year	Trophic class
1978	OLIGOTROPHIC
2007	MESOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

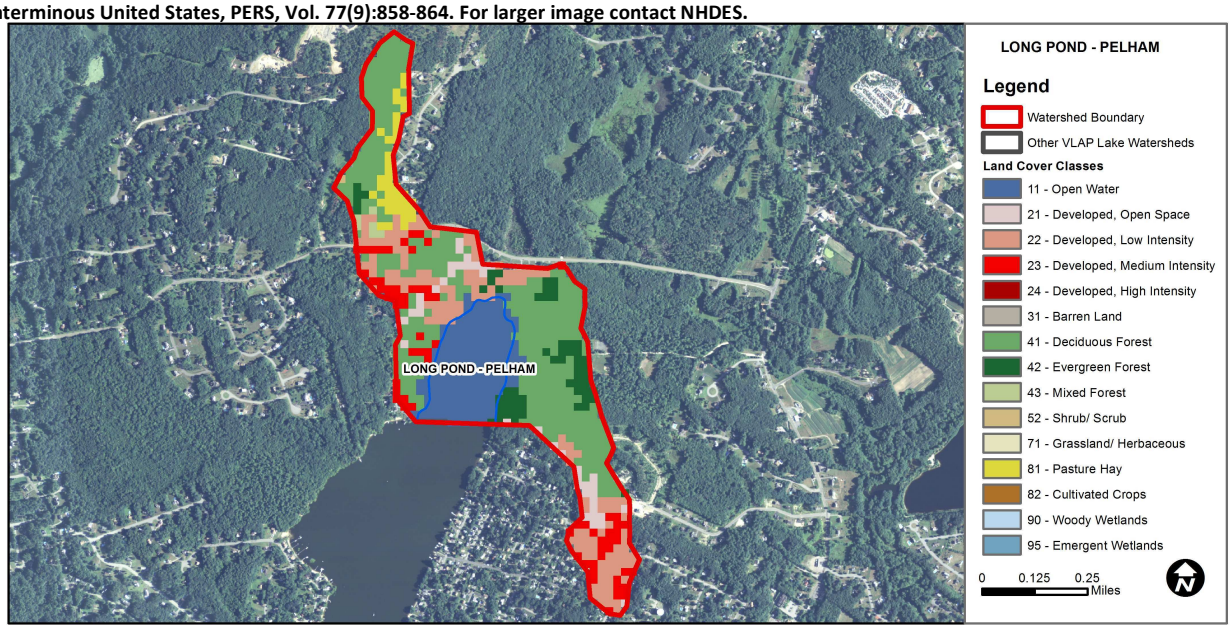
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	>/=5 samples and median is >threshold.
	pH	Good	At least 10 samples with 1 sample but < 10% of samples exceeding criteria.
	D.O. (mg/L)	Cautionary	< 10 samples and 1 exceedance of criteria. More data needed.
	D.O. (% sat)	Cautionary	< 10 samples and 1 exceedance of criteria. More data needed.
	Chlorophyll-a	Slightly Bad	>5 samples and median is > threshold.
Primary Contact Recreation	E. coli	Very Good	All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria.
	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).

BEACH PRIMARY CONTACT ASSESSMENT STATUS

LONG POND - TOWN BEACH	E. coli	Bad	>/=1 exceedance(s) of geometric mean criterion and/or >/=2 exceedances of single sample criterion, with 1 or more >2X criteria.
LONG POND - TOWN BEACH	Cyanobacteria	Bad	Cyanobacteria bloom(s).

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.

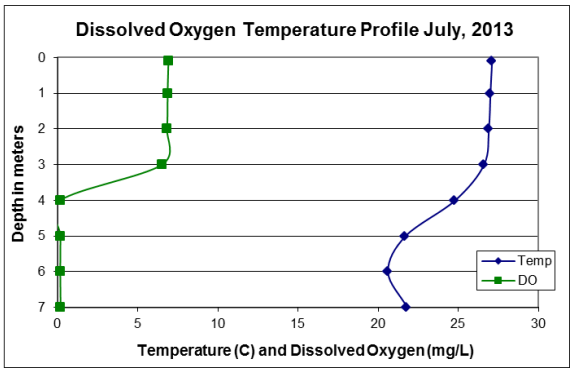


Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	18	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	4.6	Deciduous Forest	41.43	Pasture Hay	4.37
Developed-Low Intensity	16.3	Evergreen Forest	6.91	Cultivated Crops	0
Developed-Medium Intensity	7.83	Mixed Forest	0.69	Woody Wetlands	0
Developed-High Intensity	0	Shrub-Scrub	0.12	Emergent Wetlands	0

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
LONG POND, PELHAM, NH
2013 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **CHLOROPHYLL-A:** Chlorophyll levels were slightly elevated and greater than the state median, however levels were much less than those measured in 2011 and 2012. Cyanobacteria were dominant in the phytoplankton analysis.
- **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity and chloride levels were elevated and much greater than the state medians. Chloride levels at Jones Rd. are approaching the chronic water quality standard.
- **TOTAL PHOSPHORUS:** Epilimnetic (upper water layer) and hypolimnetic (lower water layer) phosphorus levels were elevated and much greater than the state median. Phosphorus is the nutrient that promotes plant and algal growth. When phosphorus levels exceed an average of 10 ug/L, the likelihood and frequency of algal and cyanobacteria blooms increases.
- **TRANSPARENCY:** Transparency improved slightly in 2013 due to the decreased algal growth; however transparency remained low and was less than the state median.
- **TURBIDITY:** Epilimnetic and hypolimnetic turbidities were elevated potentially due to algal growth and the release of organic compounds under anoxic conditions.
- **PH:** pH levels were sufficient to support aquatic life.
- **DISSOLVED OXYGEN:** Dissolved oxygen levels were much less than 1.0 mg/L in the hypolimnion. When oxygen levels decrease below 1.0 mg/L, phosphorus and other organic compounds typically bound in bottom sediments are released into water.
- **RECOMMENDED ACTIONS:** The pond's watershed is heavily urbanized. As the percentage of impervious surfaces (paved driveways, roadways, rooftops) increases, the amount of stormwater runoff reaching tributaries and the pond increases. Stormwater runoff carries pollutants, such as phosphorus, into the pond that in turn contributed to plant and algal growth, cyanobacteria blooms, and depleted dissolved oxygen. Efforts should be made to educate lake and watershed residents, and local governments on ways to reduce stormwater runoff. Developing a watershed management plan would help to identify sources of pollutants and where management efforts should be focused. The DES Watershed Assistance Section can assist with these efforts and more information can be found at http://des.nh.gov/organization/divisions/water/wmb/was/index.htm.



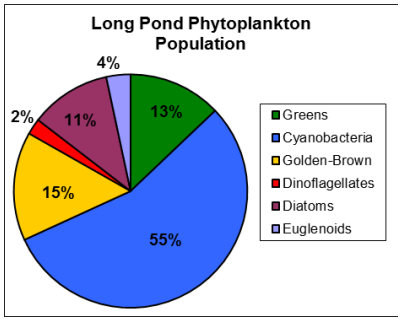


Table 1. 2013 Average Water Quality Data for LONG POND

Station Name	Alk.	Chlor-a	Chloride	Cond.	Total P	Trans.		Turb.	pH
	mg/l	ug/l	mg/l	uS/cm	ug/l	m		ntu	
						NVS	VS		
Jones Rd			140	523.0	11			1.09	6.61
Jones Rd At Scenic View			60	296.0	13			0.57	6.93
Epilimnion	22.5	6.60	77	250.0	22	2.00	2.45	2.02	7.24
Hypolimnion					36			3.80	6.79

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
pH	N/A	Ten consecutive years of data necessary.	Chlorophyll-a	N/A	Ten consecutive years of data necessary.
Conductivity	N/A	Ten consecutive years of data necessary.	Transparency	N/A	Ten consecutive years of data necessary.
			Phosphorus (epilimnion)	N/A	Ten consecutive years of data necessary.